

WHAT IS CLAIMED IS:

1. A demodulator of a differential detection system for a  $\pi/4$  shifted QPSK or DQPSK modulation wave in digital communication, comprising:

differential detectors each connected to receive an authogonal component of said modulation wave;

a corrector connected to receive outputs of said differential detectors for correcting a deviated distribution of signal points on a constellation; and

a slicer/decoder connected to receive outputs of said corrector,

wherein said slicer/decoder decodes a received bit from the signal points after the deviated distribution thereof is corrected.

2. The demodulator as set forth in claim 1, wherein said corrector has average calculators each connected to receive an output of respective one of the differential detectors and subtractors each connected to receive an output of respective one of the differential detectors and also receive an associated one of outputs of the average calculators for subtracting an average value of the output of the differential detector from the output of the differential detector.

3. The demodulator as set forth in claim 2, wherein said average calculators each include a memory for storing N pieces of output data of said

differential detector, an adder for adding together said N pieces of output data read out from the memory, and a multiplier for outputting an output corresponding to  $1/N$  of its input, N being an integer of 2 or more.

4. The demodulator as set forth in claim 2, wherein said average calculators each include a first multiplier for multiplying output data of said differential detector by a constant  $(1-\alpha)$ , a register, a second multiplier for multiplying data from the register by a constant  $\alpha$ , and an adder for adding together outputs of said first and second multipliers and storing the addition in said register, wherein an output of said adder is an average value of the output data of the differential detector and the constant  $\alpha$  is set to satisfy a relationship  $0 < \alpha < 1$ .

5. A demodulation method based on a differential detection system for a  $\pi/4$  shifted QPSK modulation wave in digital communication, comprising the steps of:

differential detecting said modulation wave by a differential detector;

correcting a deviated distribution of signal points of said differential-detected modulation wave on a constellation; and

decoding a received bit from the corrected signal points by a slicer/decoder.

6. The method as set forth in claim 5, wherein said correcting step further includes the steps of:

calculating an average value of the signal

points of said differential-detected modulation wave;  
and

subtracting said average value from each of  
the signal points of said differential-detected  
modulation wave,

wherein said slicer/decoder decodes a  
received bit from said signal points of said modulation  
wave after the average value is subtracted.